GENERAL RADIO COMPANY
service department

TESTING SPECIFICATIONS June 1959

Type 1101-A Piezo-Electric Oscillator

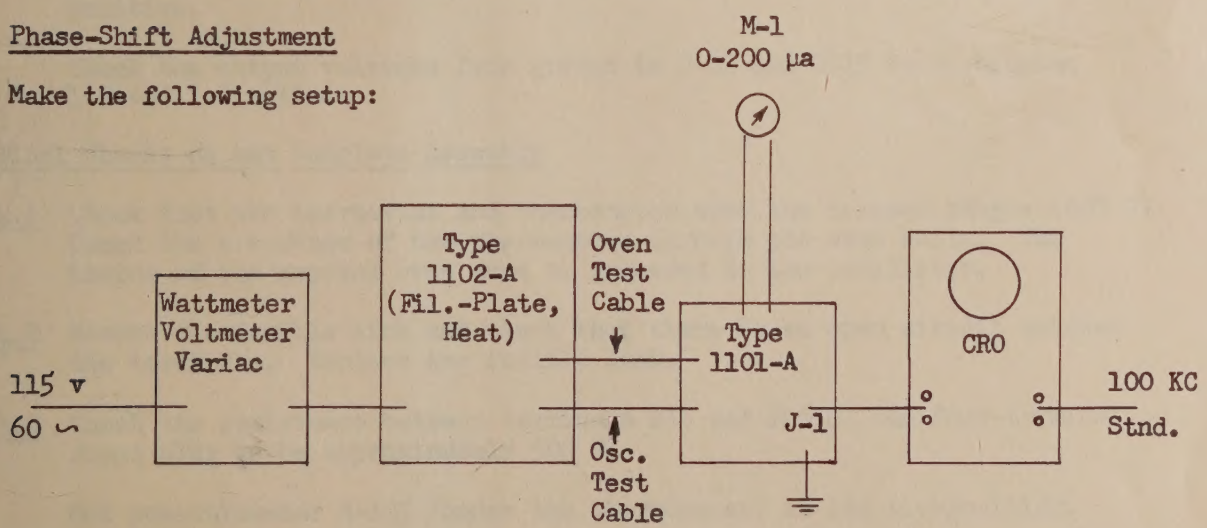
22 Baker Avenue
West Concord, Mass.

Test Equipment

1 - Type 1190-B Test Crystal
1 - Type 1800-B Vacuum-Tube Voltmeter or equivalent
1 - Type 1102-A Multivibrator and Power Supply Unit
1 - Volt-Ohmmeter
1 - Cathode Ray Oscilloscope
1 - Wattmeter-Voltmeter-Variac Unit
1 - 0-200 μa Meter (MED-22)
Standard Frequency Source (100 KC)
2 - Special Type 1101-A Test Cables
1 - Resistor, Type REC-20BF, 1000 Ω, ±5%
1 - Special Shield Box Kit consisting of:
2 - Sides, Type 1101-86
2 - Ends, Type 1101-85
4 - Spacers, Type 1101-88
16 - Screws, SCB-6-32, 3/8"
4 - Screws, SCB-10-32, 3/8"

1.0 Phase-Shift Adjustment

Make the following setup:



1.1 Place a shorting lead from the arm of potentiometer R-9 to A.T. #1 (see wiring diagram, DWG. #1101-4D/24). Install 1000 ohms (REC-20BF) from A.T. #1 to A.T. #2 to simulate a crystal. Connect the Stnd. 100 KC source to one side of the CRO and the 100 KC signal from jack

J-1 of the oscillator shelf to the other side. Insert a 0-200 μa meter between the red and the black meter leads. Enclose the shelf in the Shield Box and connect it to ground. Apply 115 volts through the Variac. The input power must be approximately 105 watts. Adjust R-9 to obtain a meter reading of about half scale. Note reading.

1.2 Adjust capacitor C-3 to give a 1:1 pattern on the CRO and tighten the lock nut.

2.0 Equalization of Bridge Arm Voltages

2.1 Remove the short from R-9 to A.T. #1. Set the FINE FREQUENCY ADJ. dial (C-14) at 50 and place a small pencil mark on the dial surface at this point. Use the COARSE FREQUENCY ADJ. dial (C-8) to obtain a 1:1 pattern on the CRO. Also mark the point on this dial at which the pattern is obtained.

2.2 Connect the Type 1800-B alternately across lamp V-4 and R-10 (370 Ω) and adjust R-9 to equalize these voltages between 0.8 and 1.2 volts. The lamp V-4 must be replaced when these voltages do not fall within this range. Note the meter reading, which is the proper operating level of the oscillator (approximately 90 μa). Change value of R-13 to obtain reading of 90 μa.

3.0 Crystal Checks

3.1 Install the test crystal and set potentiometer R-9 to give the same meter reading as that noted in paragraph 2.2 above. The arm must be set in the middle third of the potentiometer winding when in its final position.

Check the output voltages from ground to C-12 and C-15 to be between 1.0 and 1.5 volts.

4.0 Final Checks on the Complete Assembly

4.1 Check that the thermostat and thermometer have the correct ranges (60° C). Check the clearance of the thermometer through the oven walls. The inside of the crystal oven must be grounded to the oscillator.

4.2 Remove the fusible link and check that there is an open circuit between the terminals. Replace the fusible link.

4.3 Check the resistance between terminals #15 and #16 of the four-terminal Jones plug to be approximately 500 Ω.

Set potentiometer R-105 (under the thermometer) at its mid-position.

4.4 Connect the Type 1101-A to the Type 1102-A Multivibrator and Power

Supply Unit, using the two special test cables. Set the input line voltage to 117 by means of the Variac, turn the FIL. PLATE switch to ON, and check that the input power is about 105 watts. Set the HEAT switch to ON and note that the input power is now about 150 watts.

4.5 Short the thermostat connections. Note that the relay operates properly and that the pilot light in the Type 1101-A flashes on and off.

Service Department